Alaska Department of Fish and Game
Division of Wildlife Conservation
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Assessing Wildland Fire Impacts on the Winter Habitat Use and Distribution of Caribou Within Alaska's Boreal Forest Ecosystem

Bruce W. Dale

Research Performance Report
1 July 2001–30 June 2002
Federal Aid in Wildlife Restoration
Grant W-27-5, Study 3.44

This is a progress report on continuing research. Information may be refined at a later date.

FEDERAL AID
ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 25526
Juneau, AK 99802-5526

PROJECT TITLE: Assessing wildland fire impacts on the nutritional performance and distribution of caribou within Alaska's boreal forest ecosystem

PRINCIPAL INVESTIGATOR: Bruce W. Dale

COOPERATORS: W. Collins (ADF&G), K. Joly and L. Adams (USGS)

FEDERAL AID GRANT PROGRAM: Wildlife Restoration

GRANT AND SEGMENT NR.: W-27-5

PROJECT NR.: 3.44

WORK LOCATION: GMU 11, 12, 13 and 20E: The Nelchina, Copper and Upper Tanana River Drainages

STATE: Alaska

PERIOD: 1 July 2001–30 June 2002

I. PROGRESS ON PROJECT OBJECTIVES

The project statement was amended during this segment period. Changes included a change in title and several objectives to reflect the ongoing collaboration between USGS and ADF&G in studying the influence of wildland fire on caribou.

OBJECTIVE 1: Determine the nutritional status of 4 cohorts of female caribou prior to their first winter.

During this segment period, we evaluated the nutritional status of the third cohort of female caribou prior to their first winter. Calves were heavier and larger following their first summer than the previous 2 cohorts.

OBJECTIVE 2: Determine distribution and habitat use (relative to fire history and lichen abundance) of female caribou during their first winter.

By the end of this segment period, we had evaluated the monthly distribution and habitat use of approximately 100 caribou for each of the last 3 years. Caribou avoided recent fires and selected for abundant fruticose lichens in winter.

OBJECTIVE 3: Determine seasonal changes in body mass of young female caribou to evaluate the influence of fire history and lichen abundance on nutritional performance.

We conducted our third year of repeated measures of seasonal changes in body mass. Winter weight change varied much less than summer weight change variations.

OBJECTIVE 4: Evaluate influences of density, distribution, and habitat indices on changes in body mass.

We began developing indices and summarized body mass data. Winter and summer distributions varied from the patterns seen during the first 2 years. Fewer caribou wintered on the current winter range and caribou were more disbursed during summer. Summer body weights were higher than previous years while overwinter change in body mass was similar to previous years.

OBJECTIVE 5: Evaluate relationships between distribution and survival.

We began development of distribution indices and summarized annual survival data. Winter and summer distributions varied from the patterns seen during the first 2 years. Fewer caribou wintered on the current winter range and caribou were more disbursed during summer. Survival was higher during this segment period.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

OBJECTIVE 1:
JOB A. Capture and weigh at least 30 female caribou calves during the peak of calving.

We captured and weighed approximately 30 female neonate calves using standard techniques from a chartered helicopter on June 25, 2002.

JOB B. Capture, weigh, measure body parameters, radiocollar and collect blood samples from 40 five-month-old female caribou.

We captured, weighed and measured body parameters of 40 five-month-old female caribou from the 2001 cohort using standard capture techniques from chartered helicopters during the first week of October, 2001.

OBJECTIVE 2:
JOB A. Conduct periodic aerial radiotelemetry flights.

We chartered fixed wing aircraft and located all radiocollared caribou once each month during the segment period.

OBJECTIVE 3:
JOB A. Recapture individual female caribou calves in April after their first winter and in October after their second summer.

We recaptured and evaluated over-winter nutritional performance of the surviving female calves from the 2001 cohort (Objective 1, Job B) starting the week of April 22, 2002.

JOB B. Capture additional caribou, evaluate their nutritional status and fit with radio-transmitters as necessary to maintain sample sizes within each cohort.

We collared additional animals as necessary to maintain a sample of 40 calves from the 2001 Cohort and at least 100 total caribou.

JOB C. Evaluate nutritional status and remove transmitters from caribou at16-months of age.

We recaptured and measured oversummer nutritional performance of surviving 16-month-old females from the 2000 cohort during the first week of October, 2001. Radio transmitters were removed at that time.

OBJECTIVE 4:
JOB A. Calculate indices and compare to nutritional performance measures via appropriate regression techniques.

We began developing indices during this segment period. We are still collecting nutritional performance measures so comparisons have not been done.

OBJECTIVE 5:
JOB A. Calculate Kaplan-Meier survival estimates to describe basic survival functions of each cohort. Use logistic regression to evaluate the relationship between the density and distribution indices and probability of survival.

We summarized annual survival estimates for the year and compared these estimates to data from previous years. We are continuing collection of density and distribution data and developing indices.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

No additional federal aid-funded work was accomplished on this project during this segment period.

IV. PUBLICATIONS

A manuscript describing caribou movements relative to fire history is being prepared. The first draft is undergoing in-house review. It will be submitted for publication during the next segment period.

V. RECOMMENDATIONS FOR THIS PROJECT

There are no new recommendations for this project.

VI. APPENDIX

VII. PROJECT COSTS FOR THIS SEGMENT PERIOD

FEDERAL AID SHARE 33,750_ STATE SHARE $ 11,250__ = TOTAL $45,000

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APPROVAL DATE: _____